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Bovine Congenital Goitre

by

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In reviewing the occurrence of goitre in animals and man, Orr and Leitch (1929) report the wide distribution of the disease among domestic animals, particularly horses, sheep and pigs. The incidence is generally believed to follow closely that of endemic human goitre. In a later review, Russell (1944) also affirms the wide distribution of the disease, and mentions its occurrence in bovines in Nebraska and Wyoming. There seems to be no recorded instance of the occurrence of bovine goitre in Scotland, but in the course of a recent investigation into the cause of repeated stillbirths in a Morayshire herd, evidence has been obtained of the presence of the disease in newborn calves.

CLINICAL HISTORY

The cases occurred in a herd of pedigree attested Ayrshire cows, bred in the county of Moray. In a particular group of animals within the herd, before this investigation started, 13 calves in succession had been born either dead or dying, and eleven of these showed a characteristic extremely tense oedematous distension of the head, neck and forelimbs. This distension, which was bilaterally symmetrical, gave a distinct "bulldog" appearance to the heads of the newborn animals. An interesting observation was that in each birth the presentation was posterior.

The possibility that the causal factor was genetic was rejected on the evidence that three bulls had been utilised in the group. The diet of the animals, which was similar to that of the remainder of the herd, consisted of straw, with concentrates in the form of a mixed meal mixture. It was found on enquiry, however, that for varying periods in the previous autumn, during early pregnancy, the cows in the group, which were all heifers or second pregnancy animals, had grazed on a field which had been heavily dressed early in the season with crude untreated sludge or sewage. As far as could be ascertained, there was no other difference in treatment or diet between this group of animals and the others of the herd.

Two of the stillborn calves were available for examination.

ANATOMICAL FINDINGS

Calf 1.—The skin, hair formation, eyes, hooves and visible mucous membranes appeared normal. The head, neck and both forelimbs were markedly oedematous. A median incision through the skin and subcutaneous tissues from the poll to the upper lip, revealed a marked hydration of the connective tissue: there was little leakage of fluid. Over the frontal symphysis the jelly-like connective tissue measured 18 mm. from bone to the inner layer of the epidermis.

Dissection showed the cranial bones and upper jaw to be normal in shape, size, colour and consistency. The submaxillary region showed the greatest degree of oedema, extending deeply into the larynx, pharynx and the frenum linguae. The tongue appeared normal in size and shape. Subcutaneously the oedema was observed as far as the sixth rib bilaterally, and extending to the coronary bands of the forelimbs. Reflection of the supra- and infra-scapular muscles revealed oedematous infiltration in the deep connective tissues.

Macroscopically the brain, spinal cord and pituitary appeared normal and a careful examination of the whole carcase failed to reveal any abnormality in any organ except the thyroid gland.

Thyroid Gland.—On dissection from the trachea the thyroid appeared symmetrical in shape. It weighed 14·7 grammes, was of a matt yellowish colour, and finely nodular on the surface. The connective tissue surrounding the gland was oedematous. The isthmus was at first thought to be enlarged in depth and breadth, but subsequent examination of 24 thyroids from non-goitrous calves of the same age, indicated that this finding was of no pathological significance.

Calf 2.—This animal was similar to Calf 1 in appearance and anatomatical findings, but the thyroid presented more obvious changes, the lobes being markedly asymmetrical. The right lobe weighed 12·2 grammes and the left lobe 3·5 grammes. The gland showed the same matt yellowish colour and finely nodular surface as that of Calf 1.

HISTOLOGICAL EXAMINATION

The histological examination of liver, kidney and pituitary showed no abnormality in sections prepared by routine methods.

BACTERIOLOGICAL EXAMINATION

Aerobic and anaerobic cultures prepared from all the organs of the abdominal and thoracic cavities, the brain and spinal cord, oedematous fluid, and the cut surface of the thyroid, failed to reveal any organism of pathological significance.

0·6 ml. of bacteria-free filtrates of amniotic fluid from the mother of Calf 2, and of oedematous fluid and the contents of abomasum and small intestine from the calves, proved non-lethal on intravenous inoculation into mice.

EXAMINATION OF THYROIDS

Since the macroscopic appearance of the thyroids suggested goitre, their weight and iodine content were compared with those of eight calves of the same age from other areas.

(*a*) *Weight of Thyroids.*—The average weight of thyroid for these eight calves was 6·5 grammes, whereas the thyroids of the two oedematous calves weighed 14·7 and 15·7 grammes respectively.

(*b*) *Iodine Content of Thyroids.*—Estimation of the iodine content of the thyroids, by the method of Harvey (M.R.C. Special Report Series No. 201) gave 0·011 and 0·013 gramme iodine per 100 grammes fresh tissue for the oedematous calves. This is in marked contrast with the average value of 0·050 per cent. for the eight calves from other areas.

(*c*) *Histology of Calves' Thyroids.*—The indications of goitre given by the macroscoptic appearance, weight and iodine content of the thyroid glands of Calves 1 and 2 were confirmed by histological examination. Histologically, the outstanding features were the lack of colloid and the disorderly arrangement of the acinar epithelium. Such colloid as was present was of a finely granular nature, staining faintly by eosin and by Lacquer's stain, and filling only part of the acinus. The nuclei of the acinar cells were small and dense. No mitosis was observed. The cellular outline was irregular and the protoplasm was granular. The cells were detached from the basement membrane and without arrangement in the acini. (Figs. 1 and 2.)

(*d*) *Cows' Thyroids.*—The thyroids of four cows bred on the farm, two of which had grazed for some time on the sludge field, were also examined chemically and histologically. These cows were not the mothers of the dead calves. The weights of the thyroids were 28·4, 33·7, 45·3 and 36·8 grammes and their iodine contents 0·07, 0·06, 0·11 and 0·08 per cent. fresh weight respectively. A number of thyroids from adult cows in Aberdeenshire were found to range in weight from 18 to 23 grammes, but according to Sisson, the average weight of the adult bovine thyroid is 28 to 30 grammes. Even if the higher values given by Sisson are accepted as standard, only one of the above values falls within his range, the others being definitely above normal. Taking the figures for the Aberdeenshire cows as the basis of comparison, the weights of the thyroids from the four Morayshire are 50 to 100 per cent. higher. Although the iodine contents of these thyroids appear to be fairly high and histological examination showed no abnormality in their structure, the enlargement of the glands may well indicate that at some earlier period in their history the animals had suffered from an insufficiency of iodine.

IODINE INTAKE AND OUTPUT OF COWS

IODINE CONTENT OF THE DIET

No reliable estimate could be made of the daily iodine intake. It was difficult to obtain dependable figures of the quantities of

straw and concentrates fed daily. Moreover, although fishmeal was present in the sample analysed, the available evidence suggested that the amount was very variable.

(*a*) *Straw.*—The straw sample, which was much contaminated, and contained 17·8 per cent. moisture, gave 35·5 microgrammes iodine per 100 grammes dry weight. Oat straw grown under experimental conditions at Rothamsted was found to contain 11 microgrammes for 100 grammes dry weight.

(*b*) *Concentrates.*—The concentrates, which contained fishmeal, contained 200 microgrammes iodine per 100 grammes, an amount similar to that found in dried herring flesh. The consumption of this foodstuff could not be ascertained.

(*c*) *Pasture.*—A sample of pasture in withered condition taken from under snow in January, had an iodine content of 157 microgrammes per 100 grammes dry weight. It contained only 14·3 moisture, and was much contaminated. According to Orr and Leitch, Scottish pastures have an iodine content ranging from 26 to 200 microgrammes per 100 grammes dry weight.

(*d*) *Water.*—Water from the tank supply in the field dressed with sludge was much contaminated, and contained seven microgrammes iodine per litre, but it is not known whether the cows drank much of this water. Water from the tap in the byre, the only supply in the later stages of pregnancy, contained two microgrammes iodine per litre, which is a fairly low level of iodine.

From these analytical data the individual constituents of the diet would not appear to be deficient in their iodine content, but unless adequate amounts of these constituents, particularly of the concentrates, were given, the total intake of iodine might quite possibly be insufficient to meet the increasing requirements of advancing pregnancy. The foetus in the later stages of gestation requires quite large amounts of iodine, and when there is a shortage in the supply the maternal thyroid collects iodine at the expense of the foetal thyroid (Elmer, 1938, p. 229).

Excretion of Iodine in the Milk and Urine

A 24-hour sample of milk taken from the mother of Calf 2 about a fortnight after parturition, had an iodine content of 1·6 microgrammes per 100 c.c. The total volume of milk was not recorded. This is a low figure for milk, and may be taken as an indication of low iodine intake or low assimilation of iodine.

A 24-hour sample of urine from the same cow at the same time gave 19 microgrammes iodine per 100 c.c., the total volume being 9¼ litres. Elmer (1938) quotes an excretion of 214 microgrammes iodine in 20 Kg. urine from a cow fed on beet, clover and grass. This is about 1 microgramme iodine per 100 c.c. The values found for urinary iodine in Rowett Institute cows usually fell in the range 5 to 7 microgrammes per 100 c.c. but in one instance a cow fed on turnips, concentrates and straw gave 26 microgrammes iodine per 100 c.c. No record of the daily volumes excreted could be obtained. These urinary figures are included here as so few data on the subject are available. No attempt is made to draw any inferences from them, in the absence of accurate information regarding the iodine intake either before or after parturition.

Iodine Therapy

Although it was impossible to prove, because of the absence of information regarding the daily food intake and especially the amount of concentrates fed, that there had been a deficiency in iodine intake, the findings in regard to the thyroids of the oedematous calves were such as would result from deficiency of iodine intake, or from deficiency of iodine assimilation in the presence of some goitrogenic factor. An attempt was therefore made to control the condition by feeding potassium iodide, or desiccated thyroid containing 0·333 per cent. iodine, to two similar groups of cows in late pregnancy. In each case the dose given was 1 gramme every second day. The actual iodine intake of the group receiving the desiccated thyroid was thus much smaller than that of the cows receiving potassium iodide.

All calves born in both treated groups were healthy. A bull calf from the potassium iodide-fed group was normal at autopsy. Its thyroid gland weighed 7·7 grammes and contained 0·17 per cent. of iodine fresh weight. A bull calf from the group fed desiccated thyroid was also normal at autopsy. Its thyroid weighed 11·8 grammes and contained 0·09 per cent. iodine fresh weight. Histologically, the thyroids of these calves showed abundant colloid of normal staining character. The acinar epithelium showed regular arrangement and was attached to the basal membrane. The nuclei were less dense than in thyroids of oedematous calves and pyknosis was present only in a relatively small number of nuclei (Fig. 3). Although complete iodination of the thyroid had not taken place, it would appear to have done so sufficiently to maintain life and prevent pathological signs.

Iodine Content of Thyroids

Source of Thyroids	Fresh weight (gm.)	Percentage of iodine
Calf 1	14·7	0·011
Calf 2	15·7	0·013
Average of eight calves of same age from other areas	6·5	0·050
Calf from potassium iodide-fed group ..	7·7	0·17
Calf from desiccated thyroid-fed group ..	11·8	0·09
Heifer calf born dead on neighbouring farm	11·55	0·001
Bull calf born dead on neighbouring farm	4·58	0·005
Cow 1 (sludge field)	28·4	0·07
Cow 2 (sludge field)	33·7	0·06
Cow 3	45·3	0·11
Cow 4	36·8	0·08

Discussion

The low iodine content of the thyroids of the two oedematous calves (0·011 and 0·013 per cent. iodine on the fresh weight) is sufficient in itself to establish the condition as goitre. The critical level of iodine below which the glands generally show hypertrophy and hyperplasia is 0·03 per cent. (Marine and Lenhart). This chemical result is confirmed by the anatomical and histological findings. Clinically, it is not apparent why the disease should have manifested itself as a myxoedema. Kalkus (1920), in his investigations into the incidence of goitre in animals in the State of Washington, considers the submaxillary swelling as merely distension due to the hyperplastic gland. He is of the opinion that oedematous infiltrations may occur, although they were not observed in his investigations. In the present instance it is interesting to observe a facial and forearm oedema in a newborn goitrous calf, with a clinical appearance similar to that seen in adult goitrous human beings. Love (1942), describing the occurrence of goitre in newborn kids, found hairlessness and local tracheal swelling, presumably due to the enlarged thyroids, as the chief clinical manifestations of the disease. No myxoedema was seen in the four kids examined, although histologically the thyroid changes appear similar to those seen in the calves' thyroids in this investigation.

In considering the possible aetiology of the present occurrence of the disease, it was not possible to determine from the data available whether the diet of the mothers had been deficient in iodine. The iodine intake could not be correctly assessed owing to probable variations in quantity and quality of the diet during the period of gestation. At the same time, the fact that administration of iodine prevented the occurrence of thyroid enlargement and oedema, is a strong indication that the iodine intake had previously been inadequate. The results suggest the advisability of giving small doses of iodine as a preventive and protective measure during late pregnancy. The iodine dosage in the present case was purely empirical, but as it was satisfactory it might be a useful guide for iodine therapy in other similar cases.

McCarrison (1913, 1930, 1933) in his exhaustive investigations associated the occurrence of goitre in India with sewage contamination of the water supply. It is considered important, in view of his work, to bear in mind the question of sewage contamination of the field in this investigation. McCarrison experimentally demonstrated the injurious effect of insanitary conditions on the thyroid gland, and the goitrogenic properties of the toxins of certain intestinal and other bacteria.

Although the chemical composition of the sludge is not yet known, it is possible that goitrogenic agents might be present, e.g., sulphides, cyanides, or thio-ureas, and that these might have played a part in the aetiology of the disease by interfering with the assimilation of the available iodine. It is to be noted, however, that on a neighbouring farm where no sludge was used, twin calves were born dead with thyroid iodine contents of 0·001 and 0·005 per cent. Moreover, the fact that the animals given potassium iodide and desiccated thyroid showed no differences in their response to treatment, would suggest that the condition was due to a simple iodine deficiency, and that sulphur compounds were not implicated in the aetiology.

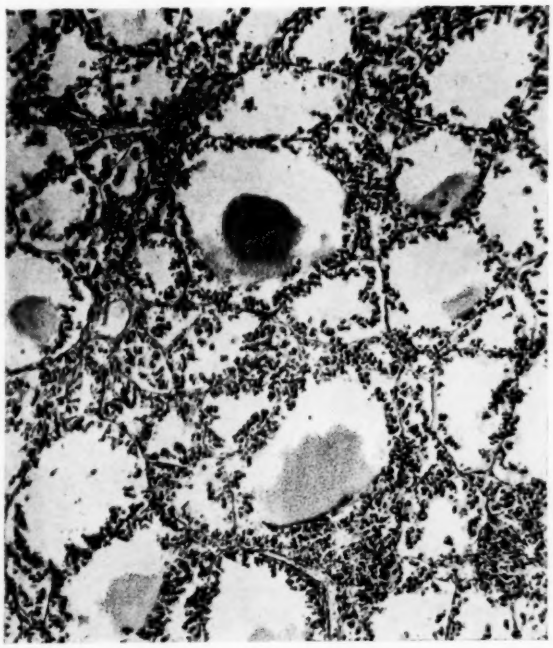

FIG. 1.—Showing sparse granular colloid and irregular disposition of acinar cells. Calf 2. Lacquer staining. × 90.

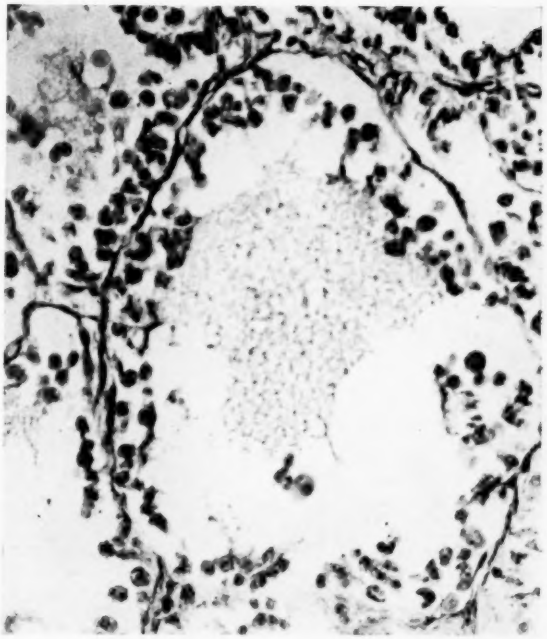

FIG. 2.—Higher magnification of same section showing detachment of acinar cells from basement membrane. Lacquer staining. × 370.

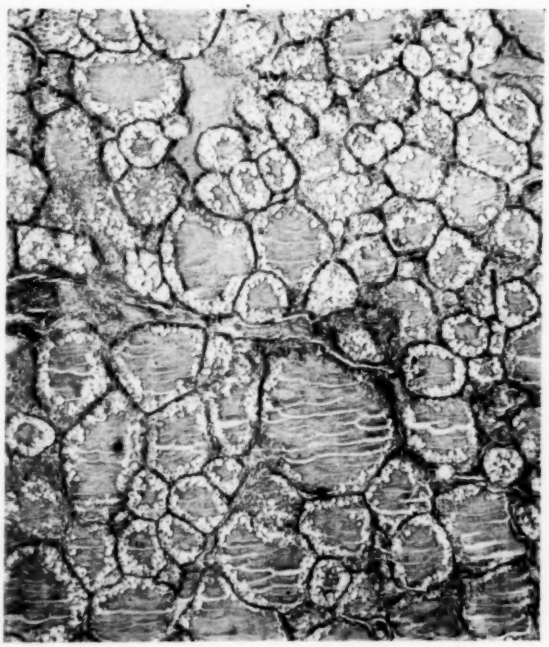

FIG. 3.—Thyroid from newborn bull calf whose mother had received potassium iodide in diet. Lacquer staining. × 90.

FIG. 4.—Normal thyroid from newborn calf in Aberdeenshire. Lacquer staining. × 90.

Summary

1. Congenital bovine goitre has been detected in Morayshire, Scotland.

2. Preliminary investigations have been made, and suggestions offered as to its aetiology.

3. There is evidence that the condition was amenable to iodine therapy. Small doses of iodine during late pregnancy are advocated in areas where congenital bovine goitre occurs.

The authors wish to record their appreciation of the helpful interest shown by Sir J. B. Orr throughout the investigation. They wish also to thank Mr. J. Milne, Veterinary Department at the Rowett Research Institute, and Mr. G. Dower, Veterinary Hygiene Department, Marischal College, Aberdeen, for the preparation of the photomicrographs.

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The Advisory Services Available to Farmers*

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VETERINARY INVESTIGATION OFFICER, ABERYSTWYTH

When your Secretary asked me to prepare a short address for to-day I was grateful for the opportunity and the honour. I am very glad to be able to do so for this reason. There may be a famine in Europe after this war and it will be necessary for our farmers to maintain and if possible to increase the output achieved during the war years. In order that this shall occur, the spread of technical information must continue, particularly amongst the less progressive class of farmer. All the members in this division, irrespective of whether they are in general practice or in the public service, are continually coming into contact with farmers. There is here an opportunity to indicate to many farmers the help they can usefully receive to improve their farming methods. Because of these facts I thought it would be a good plan to say a few words on the advisory services which are available to farmers. The advisory services, whether located in a county and represented by the agricultural organiser and the members of his staff, or located at one of the advisory centres such as universities or agricultural colleges, are part of a system of agricultural research and education, the object of which is to devise improved means of agricultural practice and to translate such research into action amongst the members of the farming community.

It is not inappropriate very briefly to review the history of agricultural research and education in this country. There was little or no such research or education in Great Britain, as we know it to-day, before 1881. Certain pioneers had done considerable work in both animal and crop husbandry and in this connection it is not possible to forget the names of such men as Coke, Tull, Townsend, Bakewell, etc. The latter part of the 19th century, characterised by a great industrial expansion, was a time of great depression in agriculture in this country. This may have had something to do with a desire on the part of progressive farmers and of the State to attempt to alter the traditional methods in order to cope with the financial depression within the industry. It was necessary for farmers after 1870 to readjust their practice when the hey-day of British agriculture was followed by an acute depression and it was during these years that the State first provided money for the purposes of agricultural education. Between 1888 and 1894 eight university departments and agricultural colleges received their first grants from the Government; included amongst these were the University Colleges at Bangor and Aberystwyth. At these and other agricultural colleges and university departments research was started on agricultural problems and young men were trained in agricultural and related sciences to meet the need for technical and advisory officers which it was anticipated would arise in the years following. In 1908 a committee under the chairmanship of Lord Reay, in reporting on the system of agricultural education then developing, recommended that in each area, the size of a county, there should be a resident agricultural adviser and a staff to work with him. This became the basis of the present agricultural staffs situated in the counties and responsible to the Agricultural Education Committee of the County Councils. In 1909, on the formation of the Development Commission, large sums of money became available for the establishment of research centres at agricultural colleges and agricultural departments of the universities. This was a great landmark in the subject under discussion and we are still, to-day, working under the plan envisaged by the Development Commission.

It was necessary to devise a system to convey to the farmer the results of research carried out in the new agricultural research centres, and in order to meet this need there developed the Provincial Advisory Service. We find that in the years 1911 to 1914 embryo agricultural advisory centres arose at Bristol, Cambridge, Leeds, Newcastle, Reading, Wye, Aberystwyth and Bangor. Development was held up during the last war but resumed again at the end. While these changes were taking place we saw also the establishment in many counties of county agricultural institutes responsible for the junior type of agricultural education. It is seen, therefore, that the so-called provincial advisory service is part of a system for research and agricultural education of which the national research institutes, the university departments, agricultural colleges, farm institutes, agricultural organisers and their staffs form the remainder. In order to have some idea of the development of this system for the dissemination of the results of agricultural research I would point out that in 1914 there were 32 county organisers with a total staff of 166; by 1939 the numbers were 55 and 468 respectively; similarly the eight advisory centres present in 1913-14 have increased to 13 at the beginning of this war, covering the whole of England and Wales. A separate system is in operation in Scotland.

Located at each advisory centre there are usually six advisory officers, employed by the university or agricultural college at which the centre is stationed, representing the following subjects: chemistry, dairy bacteriology, economics, entomology, mycology, and veterinary science. The advice of the dairy bacteriologist is sought by farmers in difficulties they encounter in connection with the production of dairy products including milk, butter, cheese, etc. He undertakes investigations into the causes of failure to produce marketable samples of any of these items and this may entail examinations of the water supplies, etc. During this war he has been responsible for the National Milk Testing and Advisory Scheme.

This scheme attempts to grade market samples of milk and through the scheme advice is given in the production of clean milk. The economist is chiefly concerned with agricultural book-keeping, cost accounting and general farm management and organisation. The entomologist is available for advice in connection with diseases of plants and animals due to insects, eelworms, etc. The war has resulted in extensive work in attempts to control the wire-worm. The mycologist investigates the causes of crop failures due to the activity of fungi, bacteria, etc. The advisory chemist gives advice on soils, manures and feeding-stuffs. If a farmer applies to his county agricultural organiser arrangements can be made to sample and analyse his soil for its need of lime, phosphate, potash and other constituents. It may interest the meeting to know that at Aberystwyth in the region of 8,000 soil samples are dealt with in a year and about a thousand samples of feeding-stuffs are examined. Of those crop failures which occurred in 1944 which could be attributed to lack of nutrients it was found that 47 per cent. were deficient in lime, 47 per cent. in phosphate, 27 per cent. in potash, 8 per cent. in organic matter and 5 per cent. in boron. The work of the agricultural chemist in no way clashes with that of the public analyst nor does away with the necessity for the latter, as his work does not relate to the administration of the Fertilisers and Feeding-stuffs Act: similarly the dairy bacteriologist has nothing to do with acts and orders which require certain minimum chemical standards in milk. With all these specialists the county agricultural organiser is the link up with the farmer and it is through the organiser that this work passes from the farmer, on the one hand, to the advisory officer on the other. Finally at each centre is usually a veterinary investigation officer whose work may be defined as the investigation into and advising upon those animal diseases of general public interest such as epidemics or cases of high and chronic mortality in flocks or herds, excluding matter within the scope of private veterinary practitioners. It may interest the meeting to know that approximately 200 *post-mortem* examinations were conducted during the last year at Aberystwyth. At the same time approximately 2,000 routine blood samples and some 70 milk and faeces samples were examined.

There is, therefore, at each advisory centre a team of workers who, themselves doing some research, are in close touch with the National Research Institutes and at the same time have intimate contacts with farmers. Many of the problems submitted to the

* Address at the Annual General Meeting of the South Wales Division, N.V.M.A., Carmarthen, April 6th, 1945.

advisory centre may require the collaboration of a number of officers which is freely given; it seems to me that this is one of the most valuable features of the existing system.

The picture I have painted is a peace-time one. In war-time each W.A.E.C. has its technical officers whose advice is available to farmers. In addition many feeding-stuff and fertiliser firms have advisory bureaux which advise on related problems.

If and when the recommendations of the Luxmoore Committee are carried out, considerable changes will take place in the Agricultural Advisory Service. It will then become a national service with greater central control than is exercised now. Other changes which are likely to take place in connection with the dissemination of technical knowledge in agricultural matters include the organisation by the National Farmers' Union of its own technical staff distributed throughout the country. There is a precedent for this, as the farmers in pre-war Denmark themselves paid 60 per cent. of the salaries of the officers in their technical and advisory services.

Discussion

The PRESIDENT: They were all very grateful to Mr. Hughes for his address. There was a lot to be discussed and done in future years. It had also been made plain to him during his years of practice that they should have agricultural students dealing with the feeding and management of dairy herds and the time had come now when they should take more interest. The subject was open for discussion. He hoped they would discuss it freely and at length.

Mr. T. H. JONES: He would like to thank Mr. Hughes for his excellent address. Although short, it was full of good things. He would like to know what Mr. Hughes did for the veterinary profession.

Mr. HUGHES: He had particularly the duties of veterinary investigation officer; with reference to the profession, any work which a practitioner felt that he would like the veterinary investigation officer to investigate, *e.g.*, blood samples and examining smears, helping in bacteriological and biological matters, and any problem at all. There was a difficulty about anything which had legal standing. The V.I.O. was usually unwilling to examine samples, etc., which might lead to any form of litigation, because there was always for that purpose the public analyst. Usually at advisory centres the chemists' work did not cover that field.

Mr. T. H. JONES: He would like to endorse what Mr. Hughes had said, that the veterinary profession should encourage the farmer to seek advice from the V.I.O.s and agricultural institutions. When he came to Llandilo about 22 years ago, he was quite surprised to see that the young farmers of Llandilo and district were far behind those of Cardiganshire in their knowledge of feeding-stuffs and farm management in general. They fed their cattle by compounds, and he began to wonder why there was such a difference between the young men of Carmarthenshire and Cardiganshire; he realised that in Cardiganshire they had colleges and most young men went to these colleges and their outlook on farming changed immediately. Then Pibwrlwyd started, and after the men went there their views changed; that pointed out to him the value of these institutions. He believed that they, as veterinary surgeons, should advise their clients to send their boys to these institutions. They all knew that farming, like every other occupation, would change. It had to be done more scientifically, and it was only by the advantage which they took through the V.I.O., and farming institutions, that they could get those conditions.

The PRESIDENT: He did not think he should let Mr. Jones get away with that, though he endorsed a lot of the things Mr. Jones had said. In those days he did not think the girls and boys were put to the test, but to-day they had been put to the test and they had taken shields and cups and Cardiganshire had second and third places. Undoubtedly, however, Pibwrlwyd, which was started in 1927, had done a lot. It had made many make time to read agricultural papers. He was very glad that Aberystwyth had seen it right to go in for animal husbandry. He did not know what would come of it, but undoubtedly there was a tremendous field to be investigated in the feeding and management of dairy cattle, and with the handling of the milk from cowshed to customer. He felt that they should have taken this step years and years ago, and he hoped now that they would take their proper stand.

Mr. WATSON: They had a farm in Pembrokeshire which was daily producing milk said to be of low keeping quality. Milk had been returned on an average of four times a week and when it came back it seemed fit to drink; there was no smell and no bad taste. It was graded "C" or less. He added that in that herd up to a month ago there was a large percentage of cows drying off. What he would like to know was, at what stage did the milk become of low keeping quality and why?

Mr. HUGHES replied that it was really outside his province, but he could possibly suggest something. The National and Milk Testing Scheme was responsible for grading of milk, and the grading of milk was based upon the bacteriological activity, if any, and that was judged by oxidising by certain dyes. One was methylene blue. Although it gave a good estimation of activity it required a number of hours, and it was not used for rapid grading of milk. So it had been superseded by a dye known as resazurin. When a large percentage of cells was present in milk, as at the end of lactation or during an outbreak of mastitis, and as Mr. Watson had already indicated when the tests were returned there had been a number of cows drying off, then the milk might be returned as grade "C." He could not tell exactly the number of bacteria which was sufficient to cause reduction of this dye, but it would be interesting to know what happened to the milk when those cows which were now drying off had calved and were milking again. They might find the milk had returned to a better keeping quality.

Owing to last season's drought conditions which still prevail in large areas of Victoria and New South Wales, Australia's grain and fodder position is very acute. Cattle and sheep are starving, with some owners reported shooting dairy herds to save them dying from starvation. Much stock from these areas is being driven by road and train to better pastoral areas in an effort to save them.—*Meat Trades Journal.*

CLINICAL COMMUNICATION

Hypocalcaemia in Ewes

Two Outbreaks Apparently Associated with a Change of Grazing

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HARPER ADAMS AGRICULTURAL COLLEGE.

OUTBREAK NO. I

A flock of 40 mixed Kerry and Clun ewes in fair condition, which had been wintered on an old pasture, was turned on to a newly reseeded grazing at 4 p.m. on June 5th, 1945, some five weeks after lambing had finished. When seen at 9 a.m. the following day, nine were found prostrate and comatose and eight of these were despatched immediately for casualty slaughter, while one was sent in alive to us for examination. The remainder of the flock was returned to the old turf.

Symptoms.—The sheep submitted to us was comatose and showed marked extension of all limbs, together with slight opisthotony. The pupil was fully dilated and did not contract to strong light, while respirations were slow and deep; temperature 100°F; pulse 120. There was slight tympany which was relieved when the ewe was held in a normal position, and rumination, defaecation and micturition were completely suppressd.

Diagnosis.—In view of the above symptoms it was decided that the case was probably one of hypocalcaemia or possibly hypomagnesaemia, or a combination of both, and a blood sample was taken for biochemical analysis. This later confirmed the diagnosis of hypocalcaemia, the figures being:—

Calcium	...	...	...	4·1 mgm. p.c. serum.
Magnesium	...	...	...	2·5 mgm. p.c. serum.
Haemoglobin	...	...	...	12·8 mgm. p.c. blood.
Acetone	...	...	...	Normal.

The normal value for serum-calcium in the sheep is given by Dukes[1] as 9-12 mgm. p.c.

Treatment.—In an attempt to obtain more rapid results it was decided to use intravenous administration in order to confirm the diagnosis, and 20 gms. calcium borogluconate and 10 gms. magnesium sulphate were injected in 150 c.c. water into the jugular vein. Within 30 minutes the ewe was able to sit up and a few minutes later could stand when helped to her feet.

By this time ten more ewes were affected, the symptoms varying from marked excitability and incoordination of gait to deep coma, and one of these had already died. Two animals exhibited marked dyspnoea and were found to have temperatures of 105°F and 106°F. The most constant and marked feature was the full dilatation of the pupil, and this was seen even in a ewe lying on her side in full sunlight.

The nine surviving ewes were injected subcutaneously with calcium borogluconate and magnesium sulphate, and recovery was complete within twelve hours with the exception of one which died soon after injection. As a further safeguard the remaining 21 ewes were also injected, and no more cases occurred. It was suggested that not less than one week should be taken in reintroducing the flock to the incriminated pasture before they were left on for a twelve-hour period, and no further cases occurred under these conditions.

OUTBREAK NO. II

A flock of 60 Cheviot and cross-bred ewes developed similar symptoms three weeks after lambing during the first week of grazing on a permanent pasture, having wintered mainly on reseeded land. After losses started the flock was moved to a rough hill grazing, but the deaths continued at two to three per day. The owner described symptoms of incoordination of gait followed by coma, and death followed in about twelve hours after the ewe became unable to stand.

A visit was made to the farm, and one ewe was found in a state of coma, with marked dilatation of the pupil and extended limbs. The temperature was 101·5°F, and there were no signs of faeces or urine having been passed recently. Rumination was suspended. A blood sample was taken for analysis and the animal was destroyed for *post-mortem* examination. One other ewe showed slight incoordination of gait, and a rapid trotting action with the head held high and the nose pointing horizontally.

Diagnosis.—The possibility of hypocalcaemia was suggested, but as the one affected ewe recovered spontaneously and no more cases occurred no treatment was applied. Altogether 19 sheep had died in addition to the one which was destroyed.

The *post-mortem* examination of the latter revealed nothing of significance, but the blood analysis confirmed the diagnosis and suggested that the previous deaths were attributable to hypocalcaemia, the figures being as follows:—

Calcium	...	...	...	6·1 mgm. p.c. serum.
Magnesium	...	...	...	2·0 mgm. p.c. serum.
Acetone	...	...	...	6·2 mgm. p.c. serum.
Haemoglobin	...	...	...	10·6 g.p.c. blood.

Discussion. A fall in the level of serum-calcium is known to be associated with "lambing sickness" and "preparturient hypocalcaemia," but both these conditions are usually recognised by their proximity to the time of parturition, whereas in the two outbreaks described here lambing had finished some five and three weeks respectively.

In Australia, hypocalcaemia is recognised in pregnant and lactating ewes, and McClymont[2] recounts the two main conditions under which it is likely to occur as (*a*) a sudden change to lush grazing conditions, and (*b*) a sudden check to feeding. Elder[3] states that where there is an abnormally prolific growth of green feed hypocalcaemia can be prevented by gradual introduction to the pasture, suggesting again that the sudden "flush" of greenfood may be the exciting factor in the condition.

The first of the two outbreaks described here would, therefore, seem to be attributable to this sudden change from an old turf to a new ley which had not previously been grazed, and in view of the very short period of grazing before clinical hypocalcaemia appeared, it does not appear likely that the actual calcium content of the herbage was involved in the etiology. Calcium-deficient diets are mentioned by Franklin[4] as causing the condition but only after some weeks on cereal rations.

With regard to the second flock, there was no evidence that there was any sudden decrease in the nutritional level although there was a definite falling off in the feeding values from the original reseeded grazing to the permanent pasture and from that again to the hill pasture, and in the absence of any other environmental changes it is assumed that this was the responsible factor.

Acknowledgment.—We should like to record our thanks to Dr. H. H. Green for supplying the results of the biochemical analyses and for his interpretation of the results.

References

[1]Dukes, H. H. (1943.) The Physiology of Domestic Animals. 5th revised edition. 49.
[2]McClymont, G. L. (1942.) *Agric. Gaz., N.S.W.* **53.** 309.
[3]Elder, H. M. (1942.) *J. Dep. Agric. Vict.* **40.** 418.
[4]Franklin, M. C. (1943.) *Yearb. Inst. Insp. Stk., N.S.W.* **51.**

MINISTRY OF AGRICULTURE NEWS SERVICE

Foot-and-Mouth Disease.—One significant fact disclosed by the examination of the circumstances surrounding outbreaks of foot-and-mouth disease in Great Britain is that, notwithstanding that this disease frequently appears amongst animals fed on swill (and even on swill which has been boiled on farms), no outbreak has been associated with the use of the concentrated kitchen waste (or "pudding") produced at local authority and other central processing plants. That this is so is undoubtedly due, not merely to the exercise of care in ensuring that the material is thoroughly sterilised, but to the steps which are taken to prevent recontamination of the foodstuffs after cooking. It is much more difficult for a pig feeder who feeds his animals on swill boiled on the premises to provide his pigs with a measure of protection against infection equal to that attainable when concentrated kitchen waste is used. The concentrator plant is designed to ensure that every particle of the material placed in it is subjected to the required temperature for the necessary length of time. Moreover, it can be made a matter of simple routine, on premises used solely for the treatment of waste foodstuffs, for adequate steps to be taken to prevent the recontamination of the "puddings" through their contact with foodstuffs which have not been treated; on such premises separate containers and utensils are kept for the sterilised product, and handling by the staff which deals with the raw waste is avoided. It is to the care taken in processing and handling the concentrated kitchen waste that its safety as a feeding stuff for animals is due.

Oat Straw and Its Feeding.—Oat straw has the highest feeding value of all the cereal straws; it should not be fed indiscriminately, however, but used as if it were hay. When substituting oat straw for hay, remember that 1 lb. of straw plus 2 lb. of marrow-stem kale will replace 1 lb. of meadow hay and give the same protein and starch equivalent. If oat straw is the only coarse fodder in the ration it is better not to have it all chaffed, but to feed some of it long, as this will assist cud chewing. Oat straw should not be fed to high yielding cows: it is too bulky in relation to its food value. It can, however, be included in the rations of low yielders and fattening bullocks.

ABSTRACTS

[Ergotism in Pregnant Sows, Female Rats and Guinea-pigs. Noroskog, A. W., and Clark, R. T. (1945.) *Amer. J. vet. Res.* **6**. 107.]

During the spring of 1943, some hundreds of baby pigs in the State of Montana died at ages of from one to 14 days, apparently from starvation resulting from agalactia in the sows. A survey indicated that the trouble was associated with the feeding of grain samples (chiefly barley) contaminated with varying amounts of ergot. Experiments were carried out, and are described in detail, to determine the effects of this barley and ergot on reproduction and lactation in swine. Nine sows fed rations containing 0·5 per cent. or 1 per cent. of ergot gave birth to 83 pigs, which averaged 1·8 lb. in weight at birth. Of these 83, only 38 were born alive and even they died within 24 hours of birth. The sows showed almost complete failure of udder development and no milk secretion could be detected. The piglets apparently died of starvation, which was contributed to by their weak state at birth, possibly due in part to the significant shortening of the gestation period in these ergotised sows. It appeared that the length of time that the sows received the ergot, rather than the actual amounts in the ration, influenced the reproductive performance and degree of mammary development. By way of contrast, 12 control sows on ergot-free rations produced 98 pigs averaging 2·9 lb. in weight at birth; only three were born dead, and 60 were still alive at 21 days of age. Three sows which received ergot in varying concentrations in their diet during the early part of pregnancy, but normal food for from eleven to 43 days prior to farrowing, showed definite udder development and milk secretion at farrowing time.

Barley ergot fed to pregnant rats during the early stages of pregnancy apparently led to resorption of foetuses; other rats lost weight and failed to produce sufficient milk. Experiments on female guinea-pigs were inconclusive, but the results appeared in general to be negative.

E. C.

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[Pulmonary Acariasis in Monkeys. Davis, L. J. (1945.) *Brit. med. J.*, p. 482. Issue of April 7th, 1945.]

In view of the possible significance of mites in the causation of pulmonary disorders in man such as asthma, bronchitis and "eosinophil lung" in the tropics, the author describes the histological characteristics of nodules, resembling early tuberculous foci, which he found scattered through the lungs of a *Macacus* monkey and which contained mites, probably of the genus *Pneumonyssus*. The nodules consisted of capsules, whose walls were of cellular granulation tissue consisting of fibroblasts, leucocytes, eosinophils, plasma cells and endothelial cells. Very little formed fibrous tissue was seen and no giant cells were noted. The lumen of each capsule was lined by epithelial cells and usually contained a mite lying amongst cellular detritus. A constant feature was the presence of heavy pigmentation due to granules lying within histocytic endothelial cells. The pigment did not give a ferrocyanide reaction and is considered as probably of faecal origin. Eosinophils did not appear more numerous than is commonly seen in granulation tissue. The nodules were usually in close proximity to bronchioles but in no case could direct contact be detected between bronchiole and capsular lumen. The author suggests the possibility that mites of this genus found in the lungs of monkeys normally exist as ecto-parasites on the skin of the host, from which they are aspirated into the air passages.

J. N. O.

Weekly Wisdom

It is strange how words are coined as symbols to raise the self-esteem of those who pursue many crafts and callings. If the dustman and the hangman were to assume the titles, respectively, of "pulvologist" and "pendologist," humanity generally would at once be moved to mirth and laughter. But why should not the practitioners of these callings that are so essential in the working of our civilisation aggrandise themselves by adopting such designations coined from hybrid Latin and Greek roots any more, for example, than the osteologist, dermatologist, helminthologist and virologist? Why, it may well be asked, cannot those who are devoted to the study of, or the treatment of the diseases of, or are in any other way concerned with, bones, skin, worms and viruses be likewise known, respectively, simply as boneman, skinman, wormman and virusman? The last dreadful coinage, virologist, be it said, generally fails in its intended effect, to move the ordinary man to awe and wonder, for, instead, it conjures up at once in his mind a homely proprietary extract.—Anon.

REPORT

Report of the Commission on Higher Education in West Africa (CMD. 6655)

This important commission visited West Africa during the early part of 1944 under the chairmanship of the Rt. Hon. Walter Elliot, M.C., M.P., D.SC., M.B., CH.B., F.R.S., and included a number of eminent scientists and education experts amongst its members. The veterinary profession is and has been intimately concerned with higher education in the African Colonies, especially in East Africa, and the report under review is, therefore, of special interest inasmuch as it forecasts the curriculum of a professional veterinary education for Africans in West Africa.

The first part of the report surveys the general educational background in West Africa and then the present facilities for higher education are considered. These consist of the Fourah Bey College in Sierra Leone, which has been affiliated with Durham University for nearly 70 years; Achimota College in the Gold Coast, opened only in 1929; and the Higher College at Yaba in Nigeria. It is only at the latter institution that facilities for higher education in agriculture, forestry, medicine and veterinary science exist. Here students in these courses spend one and a half to two years on preliminary scientific subjects before proceeding to the professional schools where they complete their studies. In the case of medicine, the student goes on to the Lagos General Hospital, only six miles away, for a further five years. The agricultural and forestry students go to Ibadan, 108 miles distant, for a further two years, whilst the veterinary students go to Vom, which is no less than 733 miles away, for a further five and a half years' study. Vom is the veterinary headquarters in Nigeria and here are situated the Research Laboratory and Veterinary School. (This arrangement is very similar to that in East Africa where the veterinary students spend the first two years at Makerere College in Kampala and then come to the Veterinary School at Entebbe, only 27 miles away, for the final three years.)

The urgent need for Africans capable of filling responsible professional and administrative posts is stressed. The immediate field for graduates in West Africa requires veterinary workers and it is recommended that a School of Animal Health as well as Schools of Agriculture and Forestry to serve, for the present, the whole of West Africa should be established. It was agreed that each larger colony in West Africa should eventually have its own university, but it was admitted that this would inevitably take a long time, so it was agreed that there should now be set up a University College in Nigeria and the Gold Coast whilst the Fourah Bey College in Sierra Leone should be reorganised and new developments in higher education carried out there. The University College in Nigeria should include faculties of arts and science and the professional Schools of Medicine, Agriculture, Forestry and Animal Health, and should be situated at Ibadan some 100 miles up the railway line from Lagos and where there is already established a School of Agriculture and Forestry. Here all the students in the whole range of faculties except the School of Animal Health would be able to find facilities for their work in the immediate vicinity of the University College. The veterinary students, however, would need to carry out their clinical work at Vom, an academic isolation which is difficult to avoid.

As regards administration of these proposed West African Colleges, it is recommended that suitable guidance to these growing institutions will be given by an "Inter-University Council for higher education in the Colonies" established in this country whilst suitable local administration, both academic and non-academic, in West Africa is provided for.

Suitable recommendations are also made as regards buildings and equipment. The cost of the site and buildings and initial equipment at Ibadan University College in Nigeria is estimated at between £500,000 and £600,000.

The difficulties in obtaining properly trained staff in the immediate post-war years are appreciated.

Animal Health

Higher training in animal health in West Africa is only to be obtained at Vom, where the Veterinary School buildings are in the process of completion. The total estimated cost is £55,000. An elementary school at Kano was closed in 1940, having functioned since 1934. In the Gold Coast an elementary Veterinary School exists at Pong Tamale.

The courses of instruction now available at the Vom School are, firstly, the assistant veterinary officer's course, which is a professional course extending over five and a half years following 18 months spent at the Higher College, Yaba. On completion of this course a diploma in veterinary medicine and surgery is granted and this qualifies the graduate to practise in Nigeria only. This follows the present practice regarding medical qualifications in this Colony. The M.R.C.V.S. course is taken as a general standard.

Secondly, there is a senior veterinary assistants' course extending over three years. (This corresponds in some ways with the Intermediate course held at the Entebbe School in Uganda.)

Thirdly, there is a junior course of one year only, designed to give further technical training and refresher courses to the existing African veterinary staff of the native administration.

The Veterinary School has only recently begun work and there were only three students taking the higher course at the time of the commission's visit.

The buildings are modern and provide accommodation for 70 students and include laboratories, classrooms, hostels, etc. There is a farm of 600 acres adjoining the school. Further provision has been made for staff and buildings.

The need for increased facilities in West Africa for training and research in agriculture, animal health and forestry is recognised and as far as the veterinary side is concerned, the following recommendations are made:—

(1) The academic standard of admission to the professional course should be the passing of the Intermediate science examination of a British university in chemistry, physics and biology and intending students should complete this course in their own territory in West Africa. Veterinary students would then carry out their pre-clinical training at Ibadan, where the fundamental teaching in the subjects of pathology and physiology will be given by the staff of the Medical School. The teaching of anatomy would require, in addition, a senior lecturer and a demonstrator, presumably veterinarians. This course will last one and a half to two years, and the students then proceed to the School of Animal Health at Vom for a further two to two and a half years' professional and clinical training.

(2) The Vom School should in the first place be an integral part of the University College at Ibadan and eventually will be a faculty of the University of Nigeria.

(3) Vom will be a School of Animal Health for the whole of West Africa.

General Observations

Reference is made to the Loveday Report and the commission emphasises its agreement with the findings of this report as regards the professional training and general education of West African veterinarians which is now being launched.

It draws attention to the Loveday Report conclusion that only if veterinary education becomes the concern of universities in the same way as medical education will veterinary medicine be provided the opportunities which its increasing importance in the national economy demands and it is recommended that the findings of the Loveday Report should bear directly on the policy which should be adopted at the Vom School where a new era in veterinary education will unfold itself.

The commission emphasises the desirability of close contact of both teachers and students with their colleagues in medicine and agriculture and they condemn the present isolation at Vom for five and a half years, which has previously been referred to, as failing to give veterinary students the broad educational background which is so necessary if they are to hold posts of responsibility.

It is recognised that the exact length of the complete veterinary course will need to be determined in the light of experience, but it is suggested that the present total of seven years is too lengthy and that a total of little more than five years should be aimed at.

Further suggestions are made as regards staff and the necessity of students from the first year onward spending their vacation at Vom to obtain first-hand experience of farm animals is stressed.

There is a minority report of the commission but their differences with the majority report do not affect the recommendations as applicable to veterinary education in West Africa.

J. Carmichael.

ARTIFICIAL INSEMINATION IN DENMARK

About half the cows in Denmark are milk recorded, and of these about one-half are artificially inseminated; one quarter of the cows in Denmark, in fact, are now attached to artificial insemination societies. In the membership of these societies there has been a steady and uniform increase. Large sums are expended on bulls, and the cattle breeding associations buy the best animals both as regards conformation and ancestry.

Following the recommendations of a government committee it has been decided to set up five progeny testing stations where 20 heifers will be allotted to each bull, and where the feeding and yields will be under the control of the State Research Laboratory. It is intended that this will supplement the existing progeny tests and the short-term investigations which will be continued.—*Farmer and Stock-Breeder.*

Questions and Answers

"Questions and Answers" will be published on alternate weeks.

The submission of questions for inclusion in this column will be welcomed: they can relate to any aspect of veterinary work. For purposes of record, each question is numbered, and those submitting questions are required to furnish (not for publication) name and address.

Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.

All communications should be addressed to the Editor.

Induction of Abortion in the Bovine

Q. CVIII.—*Is there a safe and reliable method of procuring abortion in the later stages of pregnancy in the bovine?*

In a recent case of ante-partum paralysis in a heifer, the intramuscular administration of 100 mg. stilboestrol dipropionate on three occasions at 48-hour intervals, followed by hypophysin 6 c.c. intramuscularly and attempted forcible dilation of the os uteri failed to produce any apparent effect. It was felt that manual expression of the corpus luteum was too dangerous to be risked in the seventh month of pregnancy. Could any other means have been used?

A.—It is generally recognised that it is extremely difficult to induce premature birth in bovines.

The writer has found that large doses of stilboestrol (50 mg.), followed by pituitrin (10 c.c.), will usually hasten parturition which is imminent. On one occasion an "induction" was attempted by the use of quinine, followed by heavy saline purges and ergot (6 dr. pulv. ergot). Parturition did occur but was probably fortuitous.

Enucleation of the corpus luteum (per rectum) will usually produce abortion during the first 12 to 15 weeks of pregnancy. After this time the ovaries are usually carried forward and downwards, out of reach. It is then possible to perform the same operation by laparotomy. However, it is open to question whether the corpus luteum persists after the seventh month, and even if it does, that its expression will necessarily be followed by parturition. Caesarean section may be attempted.

The writer has met a number of cases similar to that described in the question, especially during the last few months. The cause appears to be entirely nutritional. Many treatments, such as tonics, stimulants, treacle, calcium, cod-liver oil, and so on have been tried, with little success. Once an animal is in such an advanced stage of malnutrition, it is unlikely that the owner will be able to remove the cause of the trouble, or that the animal will ever be of real value.

Treatment is uneconomical and the majority of cases are best sent to the knacker yard.

"Harvest-mite"

Q. CIX.—*What is the best application to relieve the irritation due to "harvesters," so often picked up by veterinary surgeons in country areas?*

A.—We are still awaiting the discovery of an effective dressing to kill the "harvest-mite" and to alleviate the irritation that is caused during the three or four days of its sojourn in the skin and for some little time afterwards. Nor is it very helpful to those who suffer from the attacks of this parasite to learn of the very marked differences in individual host susceptibility; although this information may explain a certain lack of sympathy on the part of some of their associates.

This larval mite, belonging to the species *Trombicula autumnalis*, feeds in rather an interesting way, by inserting a long proboscis or "hypostome" and injecting an irritating and digestive juice that liquefies the surrounding tissue before it is taken up by the mite as food.

The best treatment that can be employed at the present time is to apply dressings containing benzine, or a mixture of naphthaline two parts, benzine 60 parts and liquid paraffin 30 parts. Cooling lotions containing alcohol are recommended to alleviate the irritation, and the usual cold douches or warm compresses that are employed when one does not know what else to do.

Those individuals who are particularly susceptible should take the precaution of wearing rubber boots or leggings when they cannot avoid going into rough herbage and long grass during the late summer or autumn.

Tapeworms in Puppies

Q. CX.—*What is the earliest age at which puppies may become infested with tapeworms?*

A.—No clear example of a resistance in very young animals to an infestation of parasitic helminths to which they later become susceptible is recorded in the literature. It may be presumed, therefore, that puppies can become infested with tapeworms as soon as they are born; whether they actually do become infested or not depending upon the circumstances, which may or may not provide the opportunity for the swallowing of the larval stage of the worms. Young suckling puppies would be very unlikely to have the opportunity of swallowing the larval stages of the taenioid cestodes, found in such material as the abdominal cavity of rabbits or pigs, or in the brain of sheep, so that one would not expect to find even young taenioid worms in puppies until they had begun to eat solid food. Presumably, however, it would be an easy thing for a suckling puppy to swallow a flea or louse that might be harbouring the larval stage of *Dipylidium caninum*, and in actual fact the occurrence of an inch-long *Dipylidium* has been recorded in a puppy only ten days old, and the finding of ripe segments in the faeces of a five-weeks-old puppy, showing the rapid rate at which these worms grow.

The growth of taenioid cestodes is similarly rapid. *Taenia multiceps*, the adult form of the worm that causes gid in sheep, reaches maturity in the intestine of the dog in some three or four weeks, and *Taenia pisiformis* begins to produce ripe segments in six to eight weeks. If, therefore, the rather unlikely circumstances arise in which a puppy of three or four weeks swallows the larval stages of *Taenia*, then the segments of the worm might be seen in the faeces in a puppy of two or three months old.

Injection of Lugol Iodine

Q. CXI.—*I am accustomed to use a standard human enema pump for injecting Lugol iodine into the bovine uterus. I find that the metal valves, despite immediate rinsing after use, become blocked in a few weeks with a chalky-looking deposit that ruins the valves and puts the pump out of action until they are replaced. Is there any method of prevention or of remedying this state of affairs?*

A.—There is nothing that the writer can suggest to prevent the choking of the valves in the rubber enema through the chalky substance which is created by use of the Lugol iodine on rubber.

This is a general complaint, and the only alternative is to use an all-metal syringe, tinned lining, 200 c.c. capacity, similar to a Janet's, but with all-metal barrel instead of glass barrel.

* * * * *

Correspondence

Fly Repellants

Sir,—The reply given to question XCVII (*Vet. Rec.*, 1945, Aug. 11th) was, unfortunately, not very up-to-date in its information. It stated, "Even the best repellants, such as the cresol preparations, have but a short-lasting effect." The fact is that modern research for a better method of killing and/or repelling insects has been successful in several directions, cresols, citronella and eucalyptus, etc., having been left far behind.

One of the most widely used repellants (among humans) is *dimethyl phthalate*. It is a colourless and practically odourless oily liquid, less than 1 per cent. soluble in water, which can be applied to the skin without harm though it may cause some smarting on such sensitive areas as the eyelids, lips or scrotum. Sprayed on to an animal's coat, this substance will prevent the bites of flies or mosquitoes for three to five hours. Fifty to 100 c.c. sprayed on to a suit of clothing will give protection from mosquitoes for about a week. Dimethyl phthalate is not only efficient, but is devoid of toxicity and high cost.

Indalone (n-butyl mesityl oxide oxalate) is highly efficient against the stable fly—*Stomoxys calcitrans*. The new insecticide *D.D.T.* (an abbreviation for the compound known as dichloro-diphenyl-trichlorethane) has great stability, being still lethal to insects of various kinds even as long as three months after application. It has great activity against fleas, lice, ants, mosquitoes, house and stable flies, and when applied to the animal's body as a dust, there is little to be feared from the point of view of toxicity. The dust generally used is composed of 10 per cent. D.D.T. with 90 per cent. pyrophylite dust, though almost any base could be used. Even when D.D.T. is dissolved, in solvents such as are commonly used in fly-sprays, there is still a wide margin of safety in its use.

These substances have been unobtainable, or at least in very short supply, during the war, but one now reads in the daily Press that release for the home market is on the increase.

Yours faithfully,

658, Finchley Road, N.W.11. Hamilton Kirk.

"Hookworm" in Dogs

Sir,—In the "Q. and A." column of the *Record* dated July 28th, 1945, there is a note on the above subject and as it is thought that the questioner, and perhaps others, might be interested in this condition as observed in India, the following communication is forwarded:—

In that country "hookworm," both in man and beast, is common. In the dog there may be some difficulty in diagnosis on account of a similarity, clinically, to canine tick fever and Stuttgart disease.

In "hookworm" there is a history of gradual loss of condition in spite of a fairly good appetite. The bowels are irregular and the faeces at times streaked with blood or bloodstained mucus.

The coat becomes harsh and staring, the eyes dull and the breath foul. The temperature remains normal or just above normal. In the later stages there is nasal haemorrhage, dysentery is constant and the animal anaemic and emaciated. The gums are ulcerated and with the nasal haemorrhage blocking the nostrils, breathing is difficult. Pneumonia generally sets in and death supervenes.

In chronic cases there is persistent low fever, nasal haemorrhage, debility, anaemia and profound depression. The buccal mucous membrane is ulcerated and haemorrhagic sores break out all over the body.

Positive diagnosis may be made by microscopic examination of the faeces for the worm eggs: but where such examination cannot be carried out an experienced observer will have little difficulty in deciding that the case is "hookworm" from the history and the clinical symptoms, of which latter the nasal haemorrhage may be said to be characteristic.

Treatment is unsatisfactory. The only line with which the writer has had any success consists in the preliminary preparation of the bowels by feeding on a non-bulky diet for several days before dosing, and then after complete starvation for 36 hours a dog of the fox-hound or Airedale type is given:—

Carbon Tetrachloride M 60.
Ol Chenopodii M 15.
Liq. Paraffin oz. 1.

This is followed one and a half hours later by mag. sulph. drms. 4 in a fairly concentrated aqueous solution.

The last meal is best given in the evening, so that dosing may take place in the morning, after which the animal is put into an empty stone-floored room or kennel and kept under observation for bowel movement.

Most dogs accepted the mixture readily enough and the carbon tetrachloride appeared to cause little discomfort, but the mag. sulph. was disliked and some animals would not retain it. In cases where it was retained and a satisfactory purgative action followed, the results were invariably good and permanent.

After-treatment consisted in iron tonics and nourishing food.

Yours faithfully,

c/o Glyn Mills & Co. G. K. Shaw.
September 6th, 1945.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Sept. 26th.—Meeting of the Association of Veterinary Inspectors, Conway Hall, W.C.1, 3 p.m.

Sept. 25th-28th.—N.V.M.A. Annual Meetings, 1945.

Sept. 28th.—Meeting of the Biochemical Society, Queen Square, W.C.1 (National Hospital for Diseases of the Nervous System), 11 a.m.

Oct. 4th.—Annual Meeting of the Central Veterinary Society, Conway Hall, W.C.1, 2 p.m.

Oct. 11th.—Meeting of the South-Eastern Division, N.V.M.A., at Tonbrdge (Rugby Football Club, Avebury Avenue), 2.30 p.m.

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Refresher Tuition on Return from the Forces

The N.V.M.A. is anxious to do everything within its power to meet the demand for refresher tuition which is being made by veterinarians returning from the Forces. To this end it is proposed to compile a list of practitioners willing to give such tuition and to whom applicants who wish to receive such instruction—for example, in infertility problems—can be referred. Members who are prepared to assist in this matter are requested to send in their names to the General Secretary, N.V.M.A., 36, Gordon Square, London, W.C.1.

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PERSONAL

Appointment.—Dr. M. A. Soltys, PH.D. (EDIN.), DR.MED.VET. (LWOW), has joined the staff of the Department of Animal Pathology, Glasgow Veterinary College.

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Births.—Carlyle.—On September 10th, 1945, to Joan, wife of Arnold Carlyle, M.R.C.V.S., 3, Barton Road, Cambridge, a son—Simon Spense.

Davies.—At the Annexe, Dorset County Hospital, on September 11th, 1945, to Joan (Peggy), *née* Matthews, wife of H. S. Davies, M.R.C.V.S., Dorchester—a son.

Dunn.—At Redlands, Glasgow, on August 22nd, 1945, to Evelyn Frances, wife of J. Drummond Dunn, M.R.C.V.S., of Wadebridge, Cornwall, a son—Barrie George.

. . . . . .

Cambridge Science Doctorate for Dr. Innes.—Conferment of the first Doctorate of Science upon a member of the profession by the University of Cambridge was made on June 19th, to Dr. J. R. M. Innes, D.SC. (EDIN.), PH.D. (CANTAB.), M.R.C.V.S., F.R.S.E., of Imperial Chemical Industries, Ltd., Manchester, for general work on comparative pathology. Dr. Innes, who qualified at Edinburgh in 1924, spent the years from 1926-1939 under Professor Buxton in the Institute of Animal Pathology at Cambridge, where he was Rockefeller Fellow from 1932-34, securing his Ph.D. (Cantab.) in the former year, and carrying out part-time periodic work at the Laboratory of the Royal College of Physicians in Edinburgh between 1934 and 1939. These researches and a thesis on "Swayback" brought him the Edinburgh degree of D.Sc. Dr. Innes joined the scientific staff of I.C.I. in 1939.

His published work, on which the degree of Sc.D. (Cantab.) was awarded, falls into the following groups and was carried out with various collaborators: (*a*) nine papers on the experimental pathology of various vitamin and mineral deficiencies; (*b*) eight papers on animal neuropathology with special reference to swayback; (*c*) 15 papers on the neoplastic diseases of animals; (*d*) four papers on tuberculosis in animals and (*e*) six papers on miscellaneous pathological conditions in animals.

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Forthcoming Marriage.—Kelsey—Wearing.—The engagement is announced between Frederick Harold Kelsey, M.R.C.V.S., son of Mr. and Mrs. G. Kelsey, Old Croft Cottage, Quarndon, Derby, and Dorothy, elder daughter of Mr. and Mrs. T. Wearing, Darwen, Lancs.

. . . . . .

Marriage.—Robinson—Robinson.—On August 7th, 1945, at the Registry Office, Poole, S/Lt. Lionel L. Robinson, R.N.V.R., to Lucy R. Robinson, M.R.C.V.S., of 30, South End, Croydon.

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R.C.V.S. OBITUARY

Parry, Albert, Perthybu, Bridge Street, Aberystwyth, Cardigan. Graduated London, December 18th, 1925. Died September 4th, 1945, aged 44 years.

Mr. Albert Parry, M.R.C.V.S.

Mr. Albert Parry, whose death in Aberystwyth Hospital took place with tragic suddenness following a fall, went to Aberystwyth in 1926, when he acquired the practice of the late Mr. R. Williams. Well known and popular throughout North Cardiganshire, Mr. Parry was interested in all branches of agriculture, and continued to farm Blaengader, Llanilar. He was Vice-Chairman of the Aberystwyth Agricultural Show Committee and member of the Aberystwyth Racing Committee, and acted as veterinary surgeon in all local shows. Since going to Aberystwyth he had been lecturing in the Agricultural Department of the College, and he held appointments under the Ministry of Agriculture.

Deep sympathy in their bereavement is felt with Mr. Parry's widow and son, also his brothers and sisters.

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CRYSTAL-VIOLET VACCINE AGAINST SWINE FEVER

The Ministry of Agriculture announce that crystal-violet vaccine is soon to be made available for the protection of pigs against swine fever. Some vaccine is being imported from America, and arrangements are being made by the Ministry by which certain convenient laboratories in this country can produce the material.

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ADDRESSES OF DISEASE-INFECTED PREMISES

Swine Fever:

Beds.—Powdrill's Farm, Crawley Green Road, Luton (Sept. 15th).

Berks.—Northbury Farm, Ruscombe, Twyford (Sept. 12th); Mitchell's Farm, Knowl Hill, Twyford (Sept. 13th).

Essex.—Horndon House, Horndon-on-the-Hill (Sept. 17th).

Kent.—Rising Sun Café, Main Road, Ash, Sevenoaks (Sept. 17th).

Glos.—The Branch, nr. Drybrook, Cinderford; Wigpool, Mitcheldean (Sept. 14th); The Reddings, Lydbrook; 11, Valley Road, Cinderford (Sept. 15th).

Hunts.—66, West Avenue, Ramsey (Sept. 11th and 14th).

Kinross-shire—East Rowton, Kinross (Sept. 11th).

Lincs.—Eresby House Farm, Spilsby; 30, Holding, West Bank, Sutton Bridge (Sept. 17th).

Northants.—Crow Tree Farm, Farcet Fen, Peterborough (Sept. 12th).

Warwicks.—Near "Black Swan Inn," Watling Street, Grendon, Atherstone (Sept. 11th).

Yorks.—Hempbridge Farm, Flaxley Road, Selby (Sept. 10th); Park House Farm, Aberford Road, Hook Moor, Aberford, Leeds (Sept. 17th).

Sheep Scab:

Yorks.—Holt Farm, Edale, Sheffield (Sept. 10th).

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LIVESTOCK RETURNS

The recently issued June, 1945, agricultural returns for England and Wales show increases over last year of 130,000 in the cattle population, 265,000 sheep, 224,000 pigs and 6,484,000 poultry, but a decrease of 26,000 in the number of horses. There is a slight decrease in dairy cattle, but we still have nearly 200,000 more dairy animals than before the war. Commenting on the dairy cattle position *The Farmers' Weekly* observes: "In view of the much greater proportionate increase in milk production, this is surely a fine feather in the farmer's cap. After all, it is much better to achieve more milk by better management and better cattle, than by simply increasing numbers and keeping the level of production where it was."

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WORLD'S RECORD PRICE FOR YEARLING

A world's record price for a yearling racehorse was made at Tattersall's Newmarket September Sales, at which the Gaekwar of Baroda paid 28,000 guineas for Sir E. Ohlson's colt by Nearco out of Rosy Legend, a full brother to this year's Derby winner, Dante.

The previous record for a yearling sold by public auction was the 15,000 guineas paid by Miss D. Paget in 1936 for the Fairway-Golden Hair colt, afterwards named Colonel Payne. The previous world record for a yearling sold privately was 17,000 guineas paid to the National Stud in 1926 by the Aga Khan for Feridoon. The sale lasted only two minutes ten seconds. Bidding opened at 10,000 guineas, and the previous record price was beaten in 30 seconds.—*The Times.*

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ANTI-VIVISECTION SOCIETIES AND INCOME TAX

In our issue of August 4th we reported the judgment of Mr. Justice Macnaghten, who, allowing an appeal by the Crown from a decision of the Commissioners for the Special Purposes of the Income Tax Acts, decided that the National Anti-Vivisection Society were not entitled to exemption from income tax under section 37 (1) of the Income Tax Act, 1918. The society claimed exemption on the ground that they were a body of persons established for charitable purposes only. The Special Commissioners had considered themselves bound by the decision of Mr. Justice Chitty in *In re* Foveaux Cross *v.* London Anti-Vivisection Society to hold the society exempt from tax. The following detailed review of this important case appeared in the September 1st issue of the *British Medical Journal.*

For the past 50 years anti-vivisection societies have been granted exemption from income tax on interest on their very large investments, as the result of a finding in the case *In re* Foveaux (1895, 2 Chancery, 501) by Mr. Justice Chitty on the ground that "the intention is to benefit the community; whether, if they achieved their object, the community would, in fact, be benefited is a question on which, I think, the Court is not required to express an opinion. *In re* Grove-Grady, Plowden *v.* Lawrence (1929, 1 Chancery, 557) a very large bequest, to be administered solely by anti-vivisectionists for the benefit of animals, was successfully disputed on the ground that it would not benefit the public. In his judgment on that case Mr. Justice Russell (now Lord Russell of Killowen) threw doubt on the above decision when he said: "For instance, anti-vivisection societies, which were found to be charities by Mr. Justice Chitty, and were described by him as near the border-line, might possibly, in the light of later knowledge in regard to the benefits accruing to mankind from vivisection, be held not to be charities."

On the outbreak of war in September, 1939, Dr. G. P. Crowden, who had taken up the Grove-Grady Will case, proceeded on active service, and Sir Leonard Rogers took over his work as Hon. Secretary of the Research Defence Society in addition to his duties as Hon. Treasurer. In 1942 Sir Leonard drew up a memorandum on "Are Anti-vivisection Societies Good Charities?" This was much on the lines of his paper in the *St. Bartholomew's Hospital Journal* in 1941 entitled "The Case Against the Anti-vivisectionists: Their Anti-Public Health and Anti-War Efforts and their Cruelty to Animals." The committee of the Research Defence Society directed this memorandum to be sent to the Treasury, with the request that the grounds on which anti-vivisection societies were exempted from income tax as "charities" should be reconsidered in the light of the immense advances in curative and preventive medicine due to animal experiments during the last half-century. After a question on the subject had been put down in the House of Commons by Professor A. V. Hill, Secretary to the Royal Society, the Inland Revenue authorities asked for evidence in support of the statements in the memorandum, and on receipt of this from nine medical and veterinary scientists a test case was heard in December, 1943, by the Special Commissioners of Income Tax. The commissioners spent three days in taking the evidence of the Director and Treasurer of the National Anti-Vivisection Society on one side, and of the following scientists on the other side: Major-Gen. L. T. Poole, Director of Pathology at the War Office; Sir Edward Mellanby, F.R.S., Secretary to the Medical Research Council; Dr. R. D. Lawrence; Dr. J. W. Trevan, Director of the Wellcome Physiological Research Laboratories; Sir John Ledingham, F.R.S.; Sir William Savage, President, Society of Medical Officers of Health; Dr. J. H. Burn, F.R.S., Professor of Pharmacology in the University of Oxford; Professor G. H. Wooldridge, Past-President of the Royal College of Veterinary Surgeons; and Sir Leonard Rogers, F.R.S., whose book *The Truth about Vivisection* was put in as evidence regarding the great advances in human and veterinary medicine subsequent to the verdict for the scientists in the final report of the Royal Commission published in 1912.

The findings of the Special Commissioners of Income Tax became public only when they were read in the course of an appeal in the King's Bench Division of the High Court before Mr. Justice Macnaghten, who gave his decision on July 27th of this year.[1] Owing to the General Election results having just appeared, the case received very scanty notice in the Press. The following are the essential points in the two findings. The Special Commissioners found (contrary to the contentions of the National Anti-Vivisection Society) that: "We are satisfied that the main object of the Society is the total abolition of vivisection, including in that term all experiments on living animals whether calculated to inflict pain or not, and (for that purpose) the repeal of the Cruelty to Animals Act, 1876, and the substitution of a new enactment prohibiting vivisection altogether." They also found that the evidence of "a number of very distinguished men called as witnesses for the Crown" proved conclusively that "(*a*) a large amount of present-day medical and scientific knowledge is due to experiments on living animals; (*b*) many valuable cures for and preventives of disease have been discovered and perfected by means of experiments on living animals, and much suffering both to human beings and to animals has been either prevented or alleviated thereby. We are satisfied that if experiments on living animals were to be forbidden (*i.e.*, if vivisection were abolished) a very serious obstacle would be placed in the way of obtaining further medical and scientific knowledge calculated to be of benefit to the public. We were very impressed by the evidence of Major-Gen. Poole, Director of Pathology at the War Office, as to the great value of experiments on living animals in connection with the successful carrying on of the present war by the maintenance of the health of the troops and the avoidance or minimising of many diseases to which soldiers in the field are particularly liable."

The Special Commissioners concluded that if it was their function to weigh the assumed benefit from the Society's efforts in the "advancement of morals and education among men" (no express evidence in support of which has been given) such benefit "was far outweighed by the detriment to medical science and research and consequently to the public health which would result if the Society succeeded in achieving its object, and that, on balance, the object of the Society, so far from being for the public benefit, was gravely injurious thereto, with the result that the Society could not be regarded as a charity. . . . But, upon the authorities, we regard ourselves as precluded from so holding." The Special Commissioners therefore felt bound to allow the Society's claim. Mr. Justice Macnaghten, after hearing legal arguments for two days, reversed that decision by the following judgment: "In view of these authorities [quoted in the earlier part of his judgment] it was for the Society to prove affirmatively that it was a society established for charitable purposes only." Not only did the Society fail to prove that fact, but the evidence called for the opposition to the Society's claim proved that the main object of the Society was the total abolition of vivisection, and that the attainment of that object, so far from being beneficial, would be gravely injurious to the community. In these circumstances it was the duty of the Special Commissioners to reject the Society's claim for exemption from income tax. "In my opinion, therefore, this appeal must be allowed, and the order granting the exemption must be revoked." Costs were allowed against the Society.

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The Royal Dublin Society has fixed the dates of the 1946 show fixtures as follows: Show and sale of pure-bred bulls (Shorthorn, Hereford and Aberdeen-Angus), March 6th to 8th; Spring Show, May 7th to 11th, and Dublin Horse Show, August 6th to 10th, all dates inclusive.

[1] *British Medical Journal*, August 25th, 1945, p. 265.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

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"PELVIC FRACTURE IN STILBOESTROL-TREATED COWS"

Sir,—In reply to Miss M. I. Hearder's letter in *The Veterinary Record* of September 15th, I should like to point out that the paragraph to which Miss Hearder refers is an inaccurate abstract of a series of abstracts in *Exper. Sta. Rec.*, **92**, 259-260 (1945). and is not a reliable summary of the original article.

In the original article, which was in the form of an addendum to the paper of S. J. Folley and F. H. Malpress—"The Artificial Induction of Lactation in the Bovine by the Subcutaneous Implantation of Synthetic Oestrogen Tablets," *J. Endocrinol*, **4**, 1-22 (1944), I discussed the possible causes of these fractures and the similarity of the symptoms shown by oestrogen-implanted cows to those shown by cows suffering from "nymphomania" due to cystic ovaries. Pelvic fractures are known to occur frequently in this disease and it has been suggested that they are predisposed by a rarefaction of the bones caused by excessive oestrogen production from the ovaries. There does not appear to be any reliable experimental evidence in support of this view, but, as it was a possibility which could not be overlooked, the pelvic bones from implanted cows which had developed fractures, were subjected to chemical and X-ray examination. No evidence was obtained, however, that synthetic oestrogens produced any appreciable change in the composition or structure of the bones. It was concluded, as Miss Hearder herself suggests, that trauma from persistent coital mimicry was responsible for the fractures and that the changes in pelvic morphology (resulting from general relaxation of the pelvic ligaments) might be a predisposing factor by impairing the efficiency of the natural shock-absorbing mechanism of the pelvis.

The series of experiments on the induction of lactation by synthetic oestrogens in which these fractures occurred, were described in full in *J. Endocrinol*, **4**, No. 1 (1944), and annotated in *Vet. Rec.*, **57**, 17-18 (1945).

Yours faithfully,

ALFRED T. COWIE.

The National Institute for Research in Dairying,
Shinfield, nr. Reading.
September 15th, 1945.

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ELECTRIC DEHORNING OF CALVES

Sir,—I have been asked by a client to dehorn his calves, using an electric instrument presumably of a diathermic nature, but do not know if such is manufactured in this country. Could any of your readers inform me if they know where such an instrument can be obtained.

Yours faithfully,

PATRICK A. MATHEW.

Bishop House, Brecon.
September 8th, 1945.

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NEW EDITIONS: A SUGGESTION

Sir,—As a well satisfied purchaser of a copy of Kirk's "Index of Diagnosis" (first edition) I am a little chagrined that a second edition has appeared so soon.

Many others will be in the same dilemma—to buy a copy of the second edition, which would be uneconomical; or not to buy one, which may result in inefficiency.

It is high time authors and publishers got together and produced with each new edition an addendum to the previous one, for sale to previous purchasers.

Such a supplement need be little more than a few pages setting out in note form the necessary amendments due to advancing knowledge. One could then mark in the book itself any paragraphs amended by the supplement, to which ready reference could be made.

Yours faithfully,

B. BIGNOLD, B.V.SC.

2, Viking Road,
Nedlands, West Australia.
July 27th, 1945.

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MEMBERS RELEASED FROM THE FORCES

Sir,—I have read with interest previous correspondence on this subject in *The Record*.

Apart from those members serving with the Royal Army Veterinary Corps there are many who are serving and have served for many years, in other branches of the Armed Forces, where they have not been able to keep themselves up to date or even practice their profession. I would suggest, from experience, that the N.V.M.A. should approach the Government Departments concerned, and the Colleges, with a view to arranging post-graduate courses, together with practical experience with veterinary surgeons in practice, for these members.

Under the Government Release and Resettlement Scheme cases are catered for and grants provided for members of the Armed Forces while they undergo such refresher courses. Obviously, any veterinary surgeon applying for a grant to attend such a refresher course would have to state where the course was being held and the likely duration of it. It is therefore, I think, part of the duty of the profession to arrange that such courses are available to both ex-officers R.A.V.C. and other veterinary surgeons now serving.

I write from experience, having served for nearly five years as a gunner before returning straight into practice in 1944.

Yours faithfully,

ALEX. A. KIDD, Major.

The Olde Plough,
Priest End, Thame, Oxon.
September 8th, 1945.

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VETERINARY EDUCATION

Sir,—Now that this correspondence has turned from a question of definition to a discussion on veterinary education it is perhaps not surprising that my two revered mentors, Mr. Lishman and Dr. J. T. Edwards, should withdraw. As an aside, however, Dr. Edwards does in his last letter stumble upon one of the worst possible governing conditions of any system of education. Deleting his irrelevant personal attack upon myself, he states, "if the veterinary profession were to follow the illusory course advocated . . . by Dr. Wooldridge, it would be destined to become more and more subservient to a bureaucratic hierarchy. . . ." If university education encouraged this I would certainly not favour it, but in fact the reverse is the truth. Universities, with their vital academic freedom, are recognised everywhere as our strongest bulwark against bureaucratic control, whether this be in education or in other spheres. The danger indicated by Dr. Edwards is a very real one, however, with our present educational system with the direct dependence of individual schools upon State departments and the ever-growing amount of veterinary work being performed for the State.

In view of Mr. R. H. Smythe's clear description of the perfection of our examinations, at least while he was an examiner, I think it only right that your readers should know that the Council, R.C.V.S. did not consciously supersede him as an examiner "in the interests of progress," for Mr. Smythe himself withdrew from his appointment at the time of excessive air raids and travel difficulties. When Mr. Smythe asserts, with some exaggeration, that "the examiners are in the *closest* touch with the teaching staffs," he misses my point, which referred to students and examiners. I averred that a teacher, who is continuously in touch with the work of his students throughout the course, has an overwhelming advantage over the external examiner in assessing a student's ability. A further point missed by Mr. Smythe is the simple fact that by adopting a series of university examinations a prolonged examination tour becomes unnecessary and so many otherwise busy clinicians are in a position to offer themselves as external examiners for the shorter period at one or other university.

In reply to Mr. Smythe's appeal for evidence refuting his statement that "apart from the lamentations of Dr. Wooldridge nobody seems to be very agitated," may I refer him to two memoranda published in your issue of March 24th, 1945, the first signed by over 400 members of the profession and the second from the Student Representative Council of the Royal Veterinary College. Both memoranda supported university education for the profession and showed a preference for the university type of examination.

Nor am I alone among veterinarians in appreciating the deeper gravity of the situation which the Council, R.C.V.S., has allowed to arise. The existence of a deadlock over the recommendations of the Loveday Committee was at first accepted with incredulity in educational, governmental, scientific, parliamentary and other non-veterinary circles, but now, alas, it is accepted as the expression of the profession's wish to ignore the needs of the nation for a more numerous, more widely trained and more active veterinary profession in a short-sighted desire to remain insular and small. Much work of veterinary nature is accordingly being given to others willing to undertake it. The new livestock improvement programme, the scientific advisory service for agriculture, the cadre of poultry inspectors, dairy bacteriologists and milk inspectors are being rapidly developed in accordance with the new agricultural policy without veterinary participation whilst we are not even given the opportunity of fulfilling our destined duties with milk or with meat. These facts are certainly disconcerting to those of us who visualise the full part which the profession could play in the affairs of the nation, but can we honestly blame anyone but ourselves? Let us remember "we must beat the iron while it is hot; but we may polish it at leisure."

Yours faithfully,

W. R. WOOLDRIDGE.

Bentley Hyde, Priory Drive,
Stanmore, Middlesex.
September 17th, 1945.